REMARKS

The above preliminary amendment is made to correct a typographical error in the specification. A marked-up copy of the Specification is attached.

Applicants respectfully request that the preliminary amendment described herein be entered into the record prior to calculation of the filing fee and prior to examination and consideration of the above-identified application.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicants' primary attorney-of record, Douglas P. Mueller (Reg. No. 30,300), at (612) 371.5237.

Respectfully submitted,

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from directly imparting on the light that has entered the optical element the third–order spherical aberrations that should be corrected, and as shown in Fig. 7, the optical head 50 becomes extremely resistant against lens shifts.

" -- JP 2000-235727 A --

As disclosed in "JP H10–360545A," for the optical element 54, it is possible to use an arrangement of forming thin film resistances on the optical element to voltage divide the signal applied from the outside, and applying these divided voltages to the respective segment electrodes. With this arrangement, even with a high number of segment electrodes like forty, the voltage applied from outside can be split three ways, including the voltage applied to the opposing electrode.

When using the optical element 10, the necessary phases can be generated in approximation to the plurality of segment electrodes. On the other hand, by using an optical element 10a it is possible to generate necessary phases according to their actual shape. In the optical element 10a, the liquid crystal 15, which is a phase changing layer, is formed to be convex, so that it is possible to impart a continuously changing phase on the incident light without partitioning the voltage application electrode. Consequently, by using the optical element 10a, it is possible to reproduce the power components with fidelity. In this case, it is possible to reduce the aberration after correction to substantially zero, because no high–order aberrations are caused. Fig. 6 shows the relationship between the base material thickness and the aberration after correction, when the optical element 10a is used. Fig. 8 shows the lens shift properties when a deviation in the base material thickness of 10μm is corrected with the optical element 10a. Also in this case, the lens shift properties are extremely favorable, as with the approximate correction by the segment electrodes.

As explained above, the optical head 50 of Embodiment 2 has favorable lens shift properties when correcting spherical aberrations. Moreover, the objective lens and the optical element can be disposed without being formed in one piece, so that with the optical head 50, it is possible to read with high reliability signals recorded on an optical recording medium having a deviation in the base material thickness. Also, the optical head 50 can be made even thinner. Also, because the optical element need not be installed in the actuator, it is possible to prevent a drop in the frequency response (sensitivity) of the actuator, and to manufacture at low costs and with simplified wiring. Furthermore, the optical head 50 generates the power components electrically, in contrast to a conventional optical head that